

CLAIMS

1. A signal processing system for a construction machine comprising a prime mover (10), a variable displacement hydraulic pump (1, 2) driven by said prime mover, a fuel injection device (14) for controlling fuel injection in said prime mover, input means (71) for commanding a target revolution speed of said prime mover, revolution speed detecting means (72) for detecting an actual revolution speed of said prime mover, fuel injection control means (70B, 70Ba) for controlling a fuel injection state of said fuel injection device in accordance with the target revolution speed commanded from said input means and the actual revolution speed detected by said revolution speed detecting means, and pump torque control means (7, 8, 32, 70A, 70Aa) for controlling a maximum absorption torque of said hydraulic pump in accordance with the target revolution speed commanded from said input means and the actual revolution speed detected by said revolution speed detecting means, wherein said signal processing system further comprises:

a plurality of environment detecting means (75-83) for detecting status variables related to environments of said prime mover (10) or said hydraulic pump (1, 2) and outputting respective corresponding detected environment signals;

environment modifying means (70Ab, 70i, 70Bb, 70x1-70x4) for receiving the detected environment signals and

modifying, in accordance with the detected environment signals, at least one of the fuel injection state of said fuel injection device (14) controlled by said fuel injection control means (70B, 70Ba) and the maximum absorption torque of said hydraulic pump controlled by said pump torque control means (7, 8, 32, 70A, 70Aa);

communication control means (70C) for obtaining, from an external terminal (150) via communication, alteration data for altering one or more computation elements contained in at least one of said fuel injection control means, said pump torque control means and said environment modifying means; and

computation element altering means (171, 181) for altering the computation elements based on the alteration data obtained by said communication control means.

2. A signal processing system for a construction machine according to Claim 1, wherein:

said environment modifying means is pump torque modifying means (70Ab, 70i) for modifying the maximum absorption torque of said hydraulic pump (1, 2), which is controlled by said pump torque control means (7, 8, 32, 70A, 70Aa), in accordance with the detected environment signals by using a predetermined computation element for torque modification; and

said communication control means (70C) is means for obtaining, from said external terminal (150), alteration data for altering the computation element for torque

modification, and said computation element altering means (171) is means for altering the computation element for torque modification based on the obtained alteration data.

3. A signal processing system for a construction machine according to Claim 1, wherein:

said environment modifying means is fuel injection modifying means (70Bb, 70x1-70x4) for modifying the fuel injection state of said fuel injection device (14), which is controlled by said fuel injection control means (70B, 70Ba), in accordance with the detected environment signals by using a predetermined computation element for injection modification; and

said communication control means (70C) is means for obtaining, from said external terminal (150), alteration data for altering the computation element for injection modification, and said computation element altering means (181) is means for altering the computation element for injection modification based on the obtained alteration data.

4. A signal processing system for a construction machine according to Claim 1, wherein:

said environment modifying means includes pump torque modifying means (70Ab, 70i) for modifying the maximum absorption torque of said hydraulic pump, which is controlled by said pump torque control means, in accordance with the detected environment signals by using a

predetermined computation element for torque modification, and fuel injection modifying means (70Bb, 70x1-70x4) for modifying the fuel injection state of said fuel injection device, which is controlled by said fuel injection control means, in accordance with the detected environment signals by using a predetermined computation element for injection modification; and

said communication control means (70C) is means for obtaining, from said external terminal (150), alteration data for altering the computation element for torque modification and the computation element for injection modification, and said computation element altering means (171, 181) are means for altering the computation element for torque modification and the computation element for injection modification based on the obtained alteration data.

5. A signal processing system for a construction machine according to Claim 1, wherein:

said pump torque control means (7, 8, 32, 70A, 70Aa) is means for controlling the maximum absorption torque of said hydraulic pump (1, 2) based on the target revolution speed and the actual revolution speed by using a predetermined computation element for torque control; and

said communication control means (70C) is means for obtaining, from said external terminal (150), alteration data for altering the computation element for torque control, and said computation element altering means (171)

is means for altering the computation element for torque control based on the obtained alteration data.

6. A signal processing system for a construction machine according to Claim 1, wherein:

said fuel injection control means (70B, 70Ba) is means for controlling the fuel injection state of said fuel injection device (14) based on the target revolution speed and the actual revolution speed by using a predetermined computation element for injection control; and

said communication control means (70C) is means for obtaining, from said external terminal (150), alteration data for altering the computation element for injection control, and said computation element altering means (181) is means for altering the computation element for injection control based on the obtained alteration data.

7. A signal processing system for a construction machine according to Claim 1, wherein:

said pump torque control means (7, 8, 32, 70A, 70Aa) is means for controlling the maximum absorption torque of said hydraulic pump (1, 2) based on the target revolution speed and the actual revolution speed by using a predetermined computation element for torque control;

said fuel injection control means (70B, 70Ba) is means for controlling the fuel injection state of said fuel injection device (14) based on the target revolution speed and the actual revolution speed by using a predetermined

computation element for injection control; and

said communication control means (70C) is means for obtaining, from said external terminal (150), alteration data for altering the computation element for torque control and the computation element for injection control, and said computation element altering means (171, 181) are means for altering the computation element for torque control and the computation element for injection control based on the obtained alteration data.

8. A signal processing system for a construction machine according to Claim 1, wherein:

said signal processing system further comprises information collecting means (172, 182) for collecting various items of information including the detected environment signals from said environment detecting means (75-83); and

said communication control means (70C) outputs the various items of information obtained by said information collecting means to said external terminal (150) via communication.

9. A signal processing system for a construction machine according to Claim 8, wherein:

said signal processing system further comprises operation detecting means (73-1, 73-2, 84-1, 84-2) for detecting status variables related to the operating state of said prime mover (10) or said hydraulic pump (1, 2) and

outputting corresponding detected signals; and

said information collecting means (172, 182) is means for collecting various items of information including the detected environment signals from said environment detecting means (75-83) and detected operation signals from said operation detecting means.

10. A signal processing system for a construction machine according to any one of Claims 1 to 9, wherein said communication control means (70C) performs communication with respect to said external terminal (150) via a communication line.

11. A signal processing system for a construction machine according to any one of Claims 1 to 9, wherein said communication control means (70C) performs communication with respect to said external terminal (150) in a wireless manner.

12. A signal processing system for a construction machine according to Claim 1, wherein said environment detecting means (75-83) are means for detecting at least one of environment factors including an intake pressure, an intake temperature, an exhaust temperature, an exhaust pressure, a cooling water temperature, a lubricant pressure and a lubricant temperature of said prime mover, an atmospheric pressure, a fuel temperature, and a hydraulic fluid temperature.